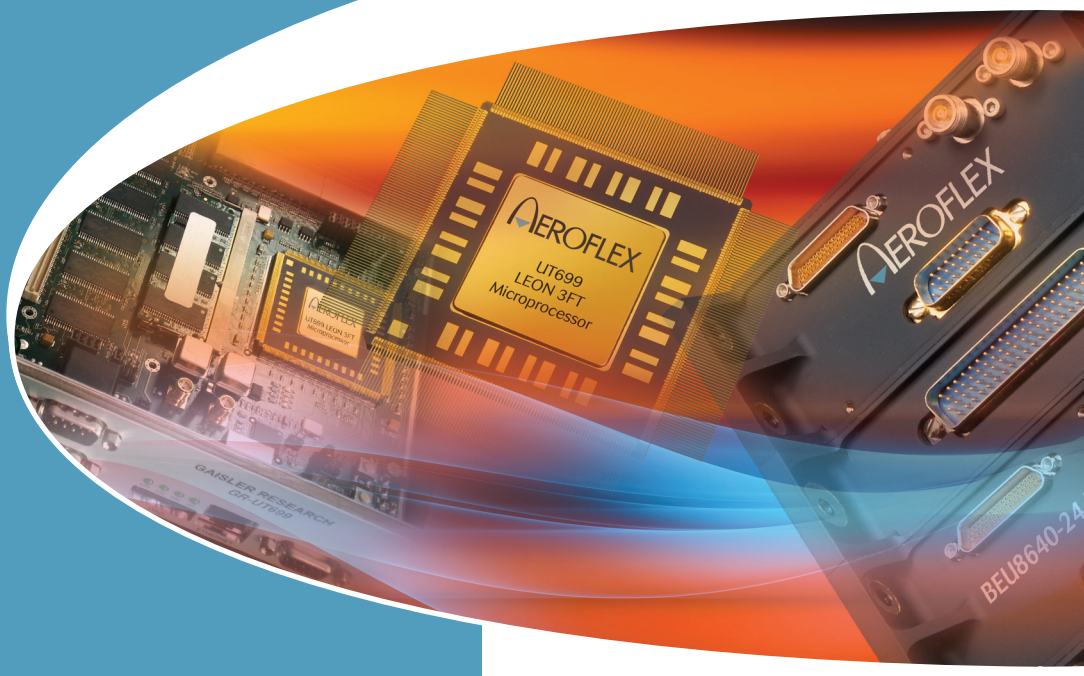
AEROFLEX

A passion for performance.

Aeroflex Colorado Springs

Aeroflex Gaisler

Aeroflex Plainview



Product Short Form

Microelectronic Solutions

January 2009

STANDARD PRODUCTS

Databus

aeroflex.com/databus
aeroflex.com/avionics

	MIL-STD-1553B	MIL-STD-1773	Multi-Protocol	±15V	+12V	+5V	Int. Transceiver	Bus Controller	Remote Terminal	Monitor	Dual Redundant	8-bit I/O	16-bit I/O	Internal RAM	Flatpack	Pin Grid Array	LCC	Application Options	QML Q & V	SMD #
UT69151 SµMMIT™ E	■	■				■		■	■	■	■		■		84*, 132	84		HR1, AV	Q,V	5962-92118
UT69151 SµMMIT™ LXE	■			■	■		■	■	■	■	■		■		100	96		HR2, AV	Q,V	5962-94663
UT69151 SµMMIT™ DXE	■					■	■	■	■	■	■		■		100	96		HR1, AV	Q,V	5962-94663
UT69151 SµMMIT™ XTE	■			■	■	■	■	■	■	■	■	■	■	■	140	139		AV	Q	5962-94758
UT69151 SµMMIT™ RTE	■					■	■		■		■	■	■	■	132,140	139		AV	Q	5962-98587
UT1553B BCRT	■	■				■		■	■		■		■		84,132	84	84	AV	Q,V	5962-88628
UT1553B BCRTM	■	■				■		■	■	■	■		■		84	84	84	AV	Q,V	5962-89577
UT1553 BCRTMP	■	■	■			■		■	■		■		■		132	144		AV	Q	5962-89501
UT1553B RTI	■	■				■			■		■		■		84			AV		M38510/55501
UT1553 RTMP	■	■	■			■			■		■		■		84	84	84	AV	Q	5962-88645
UT1553B RTR	■	■				■			■		■		■	■		68		AV	Q	5962-89576
UT1760A RTS	■	■				■			■		■		■	■		68		AV	Q	5962-89575

* End of Life (EOL) for 84-flatpack

Transceivers

aeroflex.com/transceivers
aeroflex.com/avionics

	MIL-STD-1553B	±15V	+5V	+3V	Dual Redundant	Flatpack	Application Options	QML Q & V	SMD #
UT63M147 Bus Transceiver	■		■		■	24	HR3	Q,V	5962-93226
UT63M1XX Bus Transceiver*	■ 1553A	■	■		■	36	AV	Q,V	5962-88644
UT63M143 Bus Transceiver	■			■	■	24	HR3	Q,V	5962-07242

* Available single or dual channel

Application Options

	Total Dose rads(Si)	LET_{TH} (0.25) MeV - cm^2/mg	Saturated Cross Section (cm^2) per bit	Latch-Up Immune MeV - cm^2/mg
HR1	3.0E5*	42	1.5E-4	>128
HR2	1.0E5*	42	1.5E-4	>128
HR3	1.0E6*	**	**	>111
AV	NA	NA	NA	NA

*Maximum tolerance for product. Reduced tolerance products may be available.
**Device has no memory storage elements to upset.

STANDARD PRODUCTS

HiRel Memories
aeroflex.com/memories

	Configuration	Voltages	Access/Clock	Total Dose rad(Si)	LET$_{th}$(0.25) MeV - cm^2/mg	Saturated Cross Section (cm^2) per bit	Latch-Up Immune MeV - cm^2/mg	CMOS Inputs	Flatpack	QML Q & V	SMD #
UT8R128K32 SRAM	128K x 32	3.3V*	15 ns	3.0E5	>50	1.7E-7	>100	■	68	Q,V	5962-03236
UT8R512K8 SRAM	512K x 8	3.3V*	15 ns	3.0E5	>50	1.7E-7	>100	■	36	Q,V	5962-03235
UT8CR512K32 SRAM	512K x 32	3.3V*	17 ns	3.0E5	>50	1.7E-7	>100	■	68	Q,V	5962-04227
UT8ER512K32 SRAM Monolithic	512K x 32	3.3V*	20 ns	1.0E5	>50	NA**	>100	■	68	Q,V	5962-06261
UT8Q512E 4M SRAM	512K x 8	3.3V	20 ns	5.0E4	>50	2.8E-8	>100	■	36	Q,V	5962-99607
UT8Q512K32E 16M SRAM MCM	512K x 32	3.3V	25 ns	5.0E4	>50	2.8E-8	>100	■	68	Q	5962-01533
UT9Q512E 4M SRAM	512K x 8	5V	20 ns	5.0E4	>50	2.8E-8	>100	■	36	Q,V	5952-00536
UT9Q512K32E 16M SRAM MCM	512K x 32	5V	25 ns	5.0E4	>50	2.8E-8	>100	■	68	Q	5962-01511

* 1.8V core
**The SEU error rate is driven by particle flux and EDAC scrub rate. The error rate is 6×10^{-16} errors/bit-day.

QCOTS™ Memories
aeroflex.com/memories

	Configuration	Voltages	Access/Clock	Total Dose rad(Si)	LET$_{th}$(0.25) MeV - cm^2/mg	Saturated Cross Section (cm^2) per bit	Latch-Up Immune MeV - cm^2/mg	CMOS Inputs	TTL Inputs	Flatpack	QML Q, T & V	SMD #
UT7Q512 4M SRAM	512K x 8	5V	100 ns	3.0E4	5	1.0E-7	>80		■	32	Q,T	5962-99606
UT8Q512 4M SRAM*	512K x 8	3.3V	20 ns	5.0E4	10	5.0E-9	>80		■	36	Q,T	5962-99607
UT8Q1024K8 8M SRAM*	1024K x 8	3.3V	25 ns	5.0E4	10	5.0E-9	>80		■	44	Q,T	5962-01532
UT8Q512K32 16M SRAM MCM*	512K x 32	3.3V	25 ns	5.0E4	10	5.0E-9	>80		■	68	Q,T	5962-01533
UT8SDSQ128M8 1Gb SDRAM	128M x 8	3.3V	33 MHz	1.5E4	20	5.0E-9	>42	■		54 SOP	TBD	TBD
UT8SDMQ256M8 2Gb SDRAM	256M x 8	3.3V	33 MHz	1.5E4	20	5.0E-9	>42	■		68	TBD	TBD

* Contact factory for availability.

Legacy Memories
aeroflex.com/memories

	Configuration	Voltages	Access/Clock	Total Dose rad(Si)	LET$_{th}$(0.25) MeV - cm^2/mg	Saturated Cross Section (cm^2) per bit	Latch-Up Immune MeV - cm^2/mg	CMOS Inputs	TTL Inputs	Flatpack	DIP	QML Q & V	SMD #
UT7C138/139RH Dual-Port SRAM	4K x 8/9	5V	45 ns	1.0E6	85	3.8E-8	■	■		68	68	Q,V	5962-96845
UT28F64 PROM	8K x 8	5V	35 ns	1.0E6	100	1.0E-11	>100		■	28	28	Q,V	5962-96873
UT28F64LV PROM	8K x 8	3.3V	55 ns	1.0E6	100	1.0E-11	>100		■	28	28	Q,V	5962-01516
UT28F256LVQLE	32K x 8	3.3V	65 ns	1.0E5-1.0E6	>50	2.5E-6*	>100		■	28		Q,V	5962-01517
UT28F256QLE	32K x 8	5V	45 ns	1.0E5-1.0E6	>50	9.4E-7*	>100		■	28		Q,V	5962-96891

* Saturated Cross Section (cm^2) per device

STANDARD PRODUCTS

LEON Microprocessors
aeroflex.com/LEON

Description	Total Dose rad(Si)	LET_{TH} (0.25) MeV - cm²/mg	Saturated Cross Section (cm²) per device	Latch-Up Immune MeV - cm²/mg	Flatpack	QML Q & V	SMD #
UT699 32-bit Fault-Tolerant SPARC™ V8/LEON 3FT Processor — SPARC™ microprocessor, full SPARC V8-compliant integer unit, 32-bit/ 33MHz PCI, Ethernet, 4 SpaceWire ports, 2 CAN ports, 1debug port.	3.0E5	*	*	>100	352	Q,V	5962-08228
GR-CPCI-UT699 Fault-Tolerant SPARC™ V8 Processor ASIC Evaluation Board — Development board with the UT699 LEON3FT SPARC V8 microprocessor is capable of running at a system clock speed of 75MHz. The board is cPCI form factor and can also be used in a standalone bench-top configuration. The board supports 32-bit/33MHz PCI, Ethernet, 4 SpaceWire ports capable of running up to 200Mbit/s, 2 CAN ports, on-board FLASH, SRAM, SDRAM, and socket for a PROM device. A USB debug port is provided.							

* Contact factory

Microcontrollers/ Microprocessors
aeroflex.com/microcontrollers

Description	Total Dose rad(Si)	LET_{TH} (0.25) MeV - cm²/mg	Saturated Cross Section (cm²) per device	Latch-Up Immune MeV - cm²/mg	DIP	CGA/PGA	Flatpack	QML Q & V	SMD #
UT69RH051 Microcontroller — Fully-compatible with MCS-51 ISA, 256 bytes data RAM, 32 programmable I/O ports, 7 interrupt sources; flexible clock operation 1-20 MHz.	1.0E6	86	1.0E-4	*	40		44	Q,V	5962-95638
UT80CRH196KDS Microcontroller — Fully-compatible with MCS-96 ISA, 1K bytes data RAM, 3 programmable I/O ports, enhanced memory interface support and SEU performance, 18 interrupt sources; flexible clock operation 1-20 MHz, FirstPass Core IP.	3.0E5	48	6.0E-7	>128			68	Q,V	5962-02523
UT80CRH196KD Microcontroller — Fully-compatible with MCS-96 ISA, 1K bytes data RAM, 3 programmable I/O ports, 18 interrupt sources; flexible clock operation 1-20 MHz, FirstPass Core IP.	1.0E5	25	3.1E-7	>128			68	Q,V	5962-98583
UT69R000 Microcontroller — Harvard and Register-oriented architecture, 8 MIPs @ 16 MHz, 15 interrupt levels, 16-bit or 32-bit register configurations, SEU < 7.1E-10 E/B-D.	1.0E6	60	1.2E-7	*		144	132	Q,V	5962-98552
UT1750AR RISC Microprocessor — Operates in RISC or MIL-STD-1750A mode, full 64K word address space, 16-bit and 32-bit registers.	1.0E6	*	*	*		144	132	Q,V	5962-01502

* Contact factory

SpaceWire
aeroflex.com/spacewire

	Links	Data Rates Mbps	Voltages	Total Dose rad(Si)	LET_{TH} (0.25) MeV - cm²/mg	Saturated Cross Section (cm²) per device	Latch-Up Immune MeV - cm²/mg	Package	QML Q & V	SMD #
UT200SpWPHY01 SpaceWire Physical Layer Transceiver	1	200	3.3V	3.0E5	109	5.0E-7 2.0E-7	>109	28 FP	Q,V	5962-06232
UT200SpW4RTR SpaceWire 4-port Router†	4	200	2.5V, 3.3V	3.0E5	100	*	>100	255 CLGA	Q,V	*
UT200SpW16RTR SpaceWire 16-port Router†	16	200	2.5V, 3.3V	3.0E5	*	*	>100	*	Q,V	*
UT200SpW16RTR-EVB Router Evaluation Board — Router development board has 16 ECSS-E-50-12A compliant SpaceWire ports. The board has the same functionality as our SpaceWire Router implemented in a commercial FPGA.										
UT100SpW02 SpaceWire Protocol Handler IP — The UT100SpW02 SpaceWire Protocol Handler IP is designed specifically for use with Aeroflex's RadHard Eclipse FPGA. Dual ECSS-E-50-12A compliant links; data rates from 2 to 100 Mbps; 9 bit transmit and receive FIFO user interface.										

† Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/spacewire
* Contact factory

STANDARD PRODUCTS

RadTol Eclipse FPGAs

aeroflex.com/FPGA

	SRAM bits	Logic Cells	Total Dose rad(Si)	LET_{TH}(0.25) MeV - cm²/mg	Saturated Cross Section (cm²) per bit	Latch-Up Immune MeV - cm²/mg	I/O	Package	QML Q & V	SMD #
UT6325	55K	1536	3.0E5	>42 logic cell flip flops >64 embedded SRAM	5.0E-7 2.0E-7	>120	99 I/O, 25 input 163 I/O, 25 input 316 I/O, 25 input	208 CQFP 288 CQFP 484 CCGA	Q	5962-04229
UT6325 Rapid Prototyping	55K	1536	3.0E5	>42 logic cell flip flops >64 embedded SRAM	5.0E-7 2.0E-7	>120	99 I/O, 25 input 163 I/O, 25 input 310 I/O, 25 input	208 PQFP 280 PBGA 484 PBGA	N/A	N/A
UT229FCMV4 FPGA Configuration Manager †	The UT229FCMV4 FPGA Configuration Manager for Xilinx Virtex-4 FPGAs is designed to perform both initial configuration of the Virtex-4 memory, as well as dynamic maintenance of the memory during device operation.									
UT100SpW02 SpaceWire IP Protocol Handler	The UT100SpW02 SpaceWire Protocol Handler IP is designed specifically for use with Aeroflex's Eclipse FPGA. Dual ECSS-E-50-12A compliant links; data rates from 2 to 100 Mbits/sec; 9 bit transmit and receive FIFO user interface.									

†Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/FPGA

Clock Solutions

aeroflex.com/clocks

	Frequency	# of Clocks	Crystal Capable	LVDS Ref	LVCMOS Outputs	LVDS Outputs	Total Dose rad(Si)	LET_{ONSET} MeV - cm²/mg	Saturated Cross Section (cm²)per bit	Latch-Up Immune MeV - cm²/mg	V_{DD} Core	V_{DD} I/O	Package	QML Q & V	SMD #
UT7R995	6 to 200 MHz	8			■		1.0E5	>109	*	>109	3.3V	2.25 to 3.6V	48 CFP	Q,V	5962-05214
UT7R995C	6 to 200 MHz	8	■		■		1.0E5	>109	*	>109	3.3V	2.25 to 3.6V	48 CFP	Q,V	5962-05214
UT54ALVC2525		8			■		1.0E5-1.0E6	>109	*	>111	2.0V thru 3.6V	2.0V thru 3.6V	14 CFP	Q,V	5962-06233
UT7R2XLR816†	750 KHz to 200 MHz	16	■	■	■	■	1.0E5-1.0E6	>109	*	>109	3.3V	2.25 to 3.6V	168 CLGA 168 PBGA	Q,V	5962-08243
UT7R995C-EVB	Includes user selected crystal or digital interface, flexible feedback selection series, thevenin termination options for output clocks, and independent core and output power supplies. Includes all cabling accessories needed for quick set up.														

* The device memory storage elements do not upset.
† Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/clocks

MSI Logic

Standard Microcircuit Drawing (SMD) to Aeroflex Colorado Springs Part Number www.aeroflex.com/Logic

SMD #	Aeroflex Part #	Description
5962-96512 5962-96513 5962-96513	UT54ACS00 UT54ACTS00 ★UT54ACTS00E†	Quadruple 2-Input NAND Gates
5962-96514 5962-96514 5962-96515 5962-96515	UT54ACS02 ★UT54ACS02E UT54ACTS02 ★UT54ACTS02E	Quadruple 2-Input NOR Gates
5962-96516 5962-96517 5962-96517	UT54ACS04 UT54ACTS04 ★UT54ACTS04E†	Hex Inverters
5962-96518 5962-06518 5962-06519 5962-96519	UT54ACS08 ★UT54ACS08E UT54ACTS08 ★UT54ACTS08E	Quadruple 2-Input AND Gates
5962-96520 5962-96521	UT54ACS10 UT54ACTS10	Triple 3-Input NAND Gates
5962-96522 5962-96523	UT54ACS11 UT54ACTS11	Triple 3-Input AND Gates
5962-96524 5962-96524 5962-96525 5962-96525	UT54ACS14 ★UT54ACS14E UT54ACTS14 ★UT54ACTS14E	Hex Inverter Schmitt Trigger
5962-96526 5962-96527	UT54ACS20 UT54ACTS20	Dual 4-Input NAND Gates
5962-96528 5962-96529	UT54ACS27 UT54ACTS27	Triple 3-Input NOR Gates
5962-96530 5962-96531	UT54ACS34 UT54ACTS34	Hex Noninverting Buffers
5962-96532 5962-96533	UT54ACS54 UT54ACTS54	4-Wide AND-OR-INVERT Gates
5962-96534 5962-96535 5962-90535	UT54ACS74 UT54ACTS74 ★UT54ACTS74E	Dual D Flip-Flops with Clear & Preset
5962-96536 5962-96537	UT54ACS85 UT54ACTS85	4-Bit Comparators
5962-96538 5962-96539	UT54ACS86 UT54ACTS86	Quadruple 2-Input Exclusive OR Gates
5962-96540 5962-96540 5962-96541	UT54ACS109 ★UT54ACS109E UT54ACTS109	Dual J-K Flip-Flops
5962-96542 5962-96542 5962-96543	UT54ACS132 ★UT54ACS132E UT54ACTS132	Quadruple 2-Input NAND Schmitt Triggers
5962-96544 5962-96544 5962-96545	UT54ACS138 ★UT54ACS138E† UT54ACTS138	3-Line to 8-Line Decoders/Demultiplexers
5962-96546 5962-96547	UT54ACS139 UT54ACTS139	Dual 2-Line to 4-Line Decoders/Demultiplexers
5962-96548 5962-96549	UT54ACS151 UT54ACTS151	1 of 8 Data Selectors/Multiplexers
5962-96550 5962-96551 5962-96551	UT54ACS153 UT54ACTS153 ★UT54ACTS153E	Dual 4-Input Multiplexer
5962-96552 5962-96553 5962-96553	UT54ACS157 UT54ACTS157 ★UT54ACTS157E	Quadruple 2 to 1 Multiplexers
5962-96554 5962-96555	UT54ACS163 UT54ACTS163	4-Bit Synchronous Counters
5962-96556 5962-96556 5962-96557 5962-96557	UT54ACS164 ★UT54ACS164E UT54ACTS164 ★UT54ACTS164E	8-Bit Shift Registers
5962-96558 5962-96558 5962-96559	UT54ACS165 ★UT54ACS165E UT54ACTS165	8-Bit Parallel Shift Registers
5962-96560 5962-96561	UT54ACS169 UT54ACTS169	4-Bit Up-Down Binary Counters
5962-96562 5962-96563	UT54ACS190 UT54ACTS190	Synchronous 4-Bit Up-Down BCD Counters
5962-96564 5962-96565	UT54ACS191 UT54ACTS191	Synchronous 4-Bit Up-Down Binary Counters
5962-96566 5962-96567 5962-96567	UT54ACS193 UT54ACTS193 ★UT54ACS193E	Synchronous 4-Bit Up-Down Dual Clock
5962-96753	UT54ACTS220	Clock & Wait-State Generation Circuit
5962-96568 5962-96569	UT54ACS240 UT54ACTS240	Octal Buffers w/Inverted Three-State Outputs
5962-96570 5962-96571	UT54ACS244 UT54ACTS244	Octal Buffers & Line Drivers, Three-State Outputs
5962-96572	UT54ACS245S	Schmitt Trigger Octal Bus Transceivers w/Three-State Outputs
5962-96572 5962-96573 5962-96573	UT54ACS245 UT54ACTS245 ★UT54ACTS245E	Octal Bus Transceivers with Three-State Outputs
5962-96574 5962-96575	UT54ACS253 UT54ACTS253	Dual 4-Input Multiplexers
5962-96576 5962-96577	UT54ACS264 UT54ACTS264	Look-Ahead Carry Generators for Counters
5962-96578 5962-96579	UT54ACS273 UT54ACTS273	Octal D Flip-Flops with Clear
5962-96580 5962-96581	UT54ACS279 UT54ACTS279	Quadruple S-R Latches
5962-96582 5962-96583	UT54ACS280 UT54ACTS280	9-Bit Parity Generators/Checkers
5962-96584 5962-96585 5962-96589	UT54ACS283 UT54ACTS283 ★UT54ACS283E†	4-Bit Binary Full Adders
5962-06238	★UT54ACS299E	Universal Shift/Storage Register
5962-96586 5962-96587	UT54ACS365 UT54ACTS365	Hex Buffer/Line Driver with Three-State Outputs
5962-96588	UT54ACS373	Octal Transparent Latches with Three-State Outputs
5962-96590 5962-96591	UT54ACS374 UT54ACTS374	Octal D Flip-Flops with Three-State Outputs
5962-96592 5962-96593	UT54ACS540 UT54ACTS540	Octal Driver, with Inverted Three-State Output
5962-96594 5962-96595 5962-96595	UT54ACS541 UT54ACTS541 ★UT54ACTS541E	Octal Driver, with Three-State Output
5962-06239	UT54ACS630	EDAC
5962-96596 5962-96597	UT54ACS4002 UT54ACTS4002	Dual 4-Input NOR Gate
5962-06240	UT54ACTS899	Latchable Transceiver with Parity Generator/Checker
5962-94754	UT22VP10	RadPal One Time Programmable Logic Array

★ 3.0V to 5.0V Supply Range

† Product in development; please call 800-645-8862 for more information or visit the web site www.aeroflex.com/logic.

The MSI Logic Family is compatible to ACS and ACTS logic and has high speed, lower power consumption, 3- and 5-volt supply, and SEU threshold 80 MeV - cm^2/mg. We offer 14, 16, and 20 flatpack and 14, 16, and 20 DIP.

STANDARD PRODUCTS

MSI Logic (16-bit wide)

aeroflex.com/16BitLogic

	Description	Flatpack	Total Dose rad(Si)	QML Q & V	SMD #
UT54ACTQ16244 Buffer/Line Driver	16-bit wide Buffer/Line Driver, 16 non-inverting buffers with three-state outputs. 24mA slew rate limited buffers; low simultaneously switching noise.	48	1.0E5	Q,V	5962-06243
UT54ACTQ16245 Transceiver	16-bit Bidirectional Transcever with TTL Inputs, and Three-State Outputs. 24mA slew rate limited buffers; low simultaneously switching noise.	48	1.0E5	Q,V	5962-06244
UT54ACS164245S/ UT54ACS164245SE Transceiver	16-bit Wide MultiPurpose Transceiver with Schmitt Trigger Input, Cold Spare I/O, Mixed Supply Operation (5V to 3V Translation), 3V/3V and 5V/5V.	48	1.0E5	Q,V	5962-98580
UT54ACS164245SEI Transceiver	16-bit Bidirectional MultiPurpose Transceiver with Schmitt Trigger Input, Cold and Warm Spare I/O, Mixed Supply Operation (5V to 3V translation), 3V/3V and 5V/5V.	48	1.0E5	Q,V	5962-98580
UT54ACS162245SLV Transceiver	16-bit Wide MultiPurpose Transceiver with Schmitt Trigger Input, Cold and Warm Spare I/O, Mixed Supply Operation (3.3V to 2.5V Translation), 3.3V/2.5V and 2.5V/3.3V.	48	1.0E5	Q,V	5962-02543
UT54ACTQ16374 D Flip-Flop TTL Inputs	16-bit wide D Flip-Flop TTL Inputs with Three-State Outputs. 24mA slew rate limited buffers; low simultaneously switching noise and 100MHz maximum clock.	48	1.0E5	Q,V	5962-06245
UT54ACS164646S Transceiver	16-bit Wide MultiPurpose Registered Transceiver with Schmitt Trigger Input, Cold and Warm Spare I/O, Mixed Supply Operation (5V to 3V Translation), 3V/3V and 5V/5V.	56	1.0E5	Q,V	5962-06234

LVDS

aeroflex.com/LVDS

	Description	+3.3V	+5V	Flatpack	Total Dose rad(Si)	QML Q & V	SMD #
UT54LVDS031 Quad Driver	Operates at >155.5 Mbps (77.7 MHz) switching ranges with ultra low power CMOS technology.		■	16	3.0E5-1.0E6	Q,V	5962-95833
UT54LVDS032 Quad Receiver	Operates at >155.5 Mbps (77.7 MHz) switching ranges with ultra low power CMOS technology. Receiver fail-safe.		■	16	3.0E5-1.0E6	Q,V	5962-95834
UT54LVDSC031 Quad Driver	Operates at >155.5 Mbps (77.7 MHz) switching ranges with ultra low power CMOS technology. Cold spare all LVDS outputs.		■	16	3.0E5	Q,V	5962-95833
UT54LVDSC032 Quad Receiver	Operates at >155.5 Mbps (77.7 MHz) switching ranges with ultra low power CMOS technology. Receiver fail-safe. Cold spare all LVDS inputs.		■	16	3.0E5	Q,V	5962-95834
UT54LVDS031LV/E Quad Driver	Operates at >400.0 Mbps (200 MHz) switching ranges with ultra low power CMOS technology. Cold spare all pins.	■		16	3.0E5-1.0E6	Q,V	5962-98651
UT54LVDS032LV/E Quad Receiver	Operates at >400.0 Mbps (200 MHz) switching ranges with ultra low power CMOS technology. Receiver fail-safe. Cold spare all pins.	■		16	3.0E5-1.0E6	Q,V	5962-98652
UT54LVDS217 Serializer	15 to 75 MHz shift clock support, power-down mode <60 µA (max), narrow bus reduces cable size and cost, cold spare all pins.	■		48	3.0E5-1.0E6	Q,V	5962-01534
UT54LVDS218 Deserializer	15 to 75 MHz shift clock support, power-down mode <60 µA (max), narrow bus reduces cable size and cost, cold spare all pins.	■		48	3.0E5-1.0E6	Q,V	5962-01535
UT54LVDM328 Octal 400 Mbps Bus LVDS Repeater	Operates at >400.0 Mbps (200 MHz) with 10mA LVDS output drivers. Cold spare all pins.	■		48	3.0E5-1.0E6	Q,V	5962-01536
UT54LVDM228 Quad 2x2 400 Mbps Crosspoint Switch	Operates at >400.0 Mbps (200 MHz) with 10mA LVDS output drivers. Cold spare all pins. Configurable as quad 2:1 mux, 1:2 demux, repeater or 1:2 signal splitter.	■		64	3.0E5-1.0E6	Q,V	5962-01537
UT54LVDS032LVT Low Voltage Quad Receiver with Integrated Termination Resistor	Operates at >400.0 Mbps (200 MHz) switching ranges with ultra low power CMOS technology, nominal 105 ohms integrated termination resistor. Cold spare all pins.	■		16	3.0E5-1.0E6	Q,V	5962-04201
UT54LVDM031LV Low Voltage Bus LVDS Quad Driver	Operates at >400.0 Mbps (200 MHz) with 10mA LVDS output drivers. Cold spare all pins.	■		16	3.0E5	Q,V	5962-06201
UT54LVDM055LV Dual Driver and Receiver	Operates at >400.0 Mbps (200 MHz) with 10mA LVDS output drivers. Receiver fail-safe. Cold spare all pins.	■		18	3.0E5	Q,V	5962-06202

CIRCUIT CARD ASSEMBLY

Circuit Card Assembly *aeroflex.com/CCA*

The Aeroflex Colorado Springs Circuit Card Assembly (CCA) capability consists of assembly, test and conformal coat in a high-mix/low-to-medium volume operation. Our process equipment and test capabilities provide for state-of-the-art manufacturing and are ISO 9001 and AS-9100 approved. We provide full turnkey or consignment sub-contract assembly services for high-reliability products including J-STD-001 and NASA 8739.

We combine best commercial practices of circuit card assembly with our radiation-hardened integrated circuits to provide CCA solutions for the commercial space industry. Aeroflex works with our customers to develop and qualify unique assembly processes. We utilize 2D real-time X-rays to inspect hidden or critical assembly inspection concerns. Our CCAs are manufactured for space, military, and commercial programs where quality and process control are essential for mission success.

RadHard ASIC PRODUCTS

RadHard Digital ASIC Products *aeroflex.com/RadHardASIC*	Features
UT0.6µCRH - 0.6µm	Up to 500K usable gates; clock rates up to 150 MHz; +5V and +3.3V operation; CMOS processed in commercial fab; RadHard from 100 to 300 krads(Si).
UT0.25µHBD - 0.25µm	Up to 3.0M usable gates; toggle rates up to 1 GHz; single +3.3V supply or +3.3V I/O and +2.5V core operation; CMOS processed in commercial fab; RadHard from 100 krads(Si) to 1E6 rads(Si).
UT130nHBD - 130nm†	Ultra-low-power ASICs. Up to 15M usable gates; toggle rates up to 4 GHz; +3.3V/2.5V/1.8V I/O and +1.2V core operation; CMOS processed in commercial fab; RadHard from 100 to 300 krads(Si).
ASIC Design System	Supports design signoff in Synopsys and Mentor tools, and tools using VHDL and Verilog languages.
FPGA to ASIC Conversions	Convert RadHard (or non-RadHard) FPGAs (Field Programmable Gate Arrays) to high reliability RadHard ASICs.
Category 1A Trusted	Design, Assembly, and Backend Screening Services

† Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/RadHardASIC

RadHard Mixed-Signal ASIC Products *aeroflex.com/RadHardASIC*	Features
UT0.6µCRH-0.6µm UT0.35µCRH-0.35µm UT0.18µCRH-0.18µm	0.6 µm, 0.35 µm, and 0.18 µm RadHard CMOS processes 100 to 300 krads(Si). Unipolar and bipolar supplies. 10V (± 5V), 5V (± 2.5V), 3.3V (± 1.65V), and 1.8V. Low Power. RadHard High voltage up to (20V). High precision, low-noise Analog-to-Digital conversion. Highly integrated data conversion solutions (up to 256 channels per chip) with low cross-talk. Drivers for motors, VCSEL's, LED's. Contact factory to discuss your particular requirements.

Licensable IP Cores and Processors

aeroflex.com/Gaisler

	Description
LEON3 SPARC V8 Processor Core	The LEON3 is a synthesisable VHDL model of a 32-bit processor compliant with the SPARC V8 architecture. The model is highly configurable, and particularly suitable for system-on-a-chip (SOC) designs. Delivery format is source code.
LEON3FT Fault-tolerant SPARC V8 Processor Core	The LEON3FT is a fault-tolerant version of the standard LEON3 SPARC V8 Processor. It has been designed for operation in harsh environments, and includes functionality to detect and correct (SEU) errors in all on-chip RAM memories. Delivery format is netlist.
LEON3FT for Actel RTAX FPGAs	The LEON3FT adapted for optimum performance using the Actel RTAX FPGAs. It has been designed for operation in harsh environments, and includes functionality to detect and correct (SEU) errors in all on-chip RAM memories. Delivery format is netlist.

Licensable IP Cores

aeroflex.com/Gaisler

	Description
GRLIB - Portable IP library	The GRLIB IP Library is an integrated set of about 70 reusable IP cores, designed for system-on-chip (SOC) development. The IP cores are centered around the common on-chip bus, and use a coherent method for simulation and synthesis. A unique plug&play method is used to configure and connect the IP cores without the need to modify any global resources. Delivery format is source code.
GRFPU - IEEE-754 Floating-Point Unit	The GRFPU is an IEEE-754 compliant floating-point unit, supporting both single and double precision operands. The advanced design combines high throughput with low latency, providing up to 250 MFLOPS on a 0.13 um ASIC process. Delivery format is netlist
GRPCI - Master/Target PCI Bridge	The GRPCI provides a 32-bit master/target interface for AMBA AHB-2.0 systems. It includes parameterizable FIFOs for both master and target operation, and can optionally be provided with an independent DMA engine. Delivery format is source code.
GR1553 - AHB IF for 1553BRM	The GR1553 VHDL Library contains wrappers to interface the Actel 1553 cores to the AMBA-2.0 AHB/APB on-chip buses. Wrappers for the following Actel cores are provided: Core1553BBC, Core1553BRT and Core1553BRM. Delivery format is source code.
GRSPW - SpaceWire Link	The GRSPW implements a SpaceWire Codec with RMAP support and AMBA host interface. The core implements the SpaceWire standard with the protocol identification extension (ECSS-E- 50-12 part 2) and RMAP protocol. Receive and transmit data is autonomously transferred between the SpaceWire Codec and the AMBA AHB bus using DMA transfers. Delivery format is netlist
GRETH - 10/100/1000 Mbit Ethernet MAC	The GRETH_GBIT implements a 10/100/1000 Mbit/s Ethernet Media Access Controller (MAC) with AMBA host interface. The core implements the 802.3-2002 Ethernet standard. Receive and transmit data is autonomously transferred between the Ethernet MAC and the AMBA AHB bus using DMA transfers. Delivery format is source code.
GRUSB - USB 2.0 Host Controller	The USB 2.0 Host Controller provides a link between the AMBA on-chip bus and the Universal Serial Bus (USB). The host controller supports High- Full- and Low-Speed USB traffic. USB 2.0 High-Speed functionality is supplied by an enhanced host controller implementing the Enhanced Host Controller Interface (EHCI). Full- and Low-Speed functionality (USB 2.0 and USB 1.1) is supplied by one or more companion controllers implementing the Universal Host Controller Interface (UHCI). Delivery format is source code.
GRCAN - CAN 2.0 Controller	The GRCAN provides a CAN 2.0 controller for AMBA AHB-2.0 systems. The CAN controller supports transmission and reception of sets of messages by use of circular buffers located in memory external to the core. Separate transmit and receive buffers are assumed. Reception and transmission of sets of messages can be ongoing simultaneously. Delivery format is source code.
GRI2C - Inter IC Bus Interface	The IC bus is a simple 2-wire serial multi-master bus with collision detection and arbitration. The bus consists of a serial data line (SDA) and a serial clock line (SCL). Both the master and a slave cores are provided. Delivery format is source code.
GRSPI - Serial Peripheral Interface	The core provides a link between the AMBA APB bus and the Serial Peripheral Interface (SPI) bus. Through registers mapped into APB address space, the core can be configured to work either as a master or a slave. Delivery format is source code.
GRAES/GRECC - Crypotography Cores	The GRAES - Advanced Encryption Standard (AES) cryptography and the GRECC - Elliptic Curve Cryptography (ECC) cryptography cores combine high throughput performance with seamless integration with the LEON3 32-bit SPARC processor core. Delivery format is source code.
Spacecraft Data Handling	The Spacecraft Data Handling IP cores represent a collection of cores that have been developed specifically for the space sector. These IP cores implement functions commonly used in spacecraft data handling and management systems. Delivery format is source code.

Components

aeroflex.com/Gaisler

	Description
GR701A	GR701A is a PCI to SpaceWire and 1553 Bridge. Its fault tolerant design is implemented using the Actel RTAX FPGA technology to enable total immunity to radiation effects.
LEON3FT - RTAX	LEON3FT-RTAX is an implementation of the LEON3FT SPAR V8 processor using the Actel RTAX FPGA technology. The fault tolerant design of the processor in combination with the radiation tolerant FPGA gives total immunity to radiation effects.

Software Tools *aeroflex.com/Gaisler*	Description
GRMON	GRMON is a hardware debug monitor for LEON processors. It communicates with the LEON Debug Support Unit (DSU) and allows non-intrusive debugging of the complete target system.
TSIM ERC32/LEON Simulator	TSIM is an instruction-level simulator capable of emulating ERC32- and LEON-based computer systems. TSIM is developed for near-real time performance and cycle true behaviour. Using the simulators, it is possible to develop and debug target applications before the real hardware is available, thereby shortening the product development cycle.
GRSIM LEON Multi-Processor Simulator	The GRSIM simulator emulates a multi-processor LEON3 system, and has an accurate modelling of the on-chip IP cores and AMBA buses. It is time-based rather than instruction-based (as TSIM) and can be attached to other simulation frameworks such as System-C.

Compilers and Operating Systems *aeroflex.com/Gaisler*	Description
Bare-C Cross-Compiler System (BCC)	BCC is open source and royalty-free. It includes: GNU C/C++ Compiler with binutils, Simple bare-C runtime with interrupt support, optional Pthreads support, GNU gdb debugger with DDD front-end.
RTEMS Cross-Compiler System (RCC)	RCC is open source and royalty-free. It includes: GNU C/C++ Compiler with binutils, RTEMS real-time kernel 4.8.0 or 4.6.5, Network and file system support, GNU gdb debugger with DDD front-end.
eCOS Real-Time O/S for LEON	eCos is an open source, royalty-free, real-time operating system intended for embedded applications. The highly configurable nature of eCos allows the operating system to be customised to precise application requirements, delivering the best possible run-time performance and an optimised hardware resource footprint.
SnapGear Embedded LINUX for LEON	LINUX is open source and royalty-free. SnapGear Linux is a full source package, containing kernel, libraries and application code for rapid development of embedded Linux systems. The LEON port of SnapGear supports both MMU and non-MMU LEON configurations, as well as the optional V8 mul/div instructions and Floating-Point Unit (FPU). The port includes Symmetric Multi-Processing (SMP) support for LEON3 systems with multiple processors.
VxWorks 6.5 port and BSP for LEON	The VxWorks-6.5-LEON is a port of Wind River VxWorks 6.5 operating system to the LEON processor. A BSP and drivers for all standard on-chip peripherals are included. Development can be done on Linux or Windows hosts. The port and BSP are provided in full source code with example projects supplied.
VxWorks 5.4 BSP for LEON	The VxWorks-5.4-LEON is a LEON2/3 board support package (BSP) for the Wind River VxWorks 5.4 operating system. The BSP supports both LEON2 (AT697) and LEON3 processors, including all standard on-chip peripherals. The BSP is provided in full source code.
Nucleus port and BSP for LEON	The Nucleus-LEON is a port of the Mentor Graphics Nucleus operating system. A BSP and drivers for all standard on-chip peripherals are included. Development can be done on Linux or Windows hosts. The port and BSP are provided in full source code.
ThreadX port and BSP for LEON	The ThreadX-LEON is a port of the Express Logic ThreadX operating system. A BSP and drivers for Ethernet and UARTS are included. Development can be done on Linux or Windows hosts. The port and BSP are provided in full source code

Boards *aeroflex.com/Gaisler*	Description
GR-CPCI-UT699	Development board with the UT699 LEON3FT SPARC V8 microprocessor is capable of running at a system clock speed of 75MHz. The board is cPCI form factor and can also be used in a standalone bench-top configuration. The board supports 32-bit/33MHz PCI, Ethernet, 4 SpaceWire ports capable of running up to 200Mbit/s, 2 CAN ports, on-board FLASH, SRAM, SDRAM, and socket for a PROM device. An USB debug port is provided.
GR-CPCI-AT697	Development board with the AT697 LEON2FT SPARC V8 microprocessor capable of running at a system clock speed of 80MHz. The board is cPCI form factor. The board supports 32-bit/33MHz PCI, Ethernet, on-board FLASH, SRAM, SDRAM. An serial debug port is provided.
GR-PCI-XC5V	Xilinx Virtex 5, XC5VLX50 FPGA PCI format plug in board, especially developed for LEON development, with on-board SO-DIMM, SRAM, FLASH, GBit Ethernet, USB 2.0, DSU UART, user and memory expansion connectors .
GR-CPCI-XC4V	Xilinx Virtex 4, XC4VLX100 FPGA cPCI format plug in board, especially developed for LEON development, with on-board SO-DIMM, SRAM, FLASH, DSU UART, user and memory expansion connectors. The board is capable of operating stand-alone, as a Compact-PCI plug-in card, and as a Compact-PCI system controller.
GR-CPCI-AX	The board supports the early development and fast prototyping of LEON3/RTAX designs. The board incorporates a socket for an Actel AX2000/ RTAX2000 FPGA, with on-board SO-DIMM, SRAM, FLASH, DSU UART, user and memory expansion connectors. The board is capable of operating stand-alone, as a Compact-PCI plug-in card, and as a Compact-PCI system controller.
GR-XC3S-1500	Low cost, Xilinx Spartan 3, XC3S-1500-4 FPGA, especially developed for LEON development. The board provides USB, Ethernet, Video, PS2, SO-DIMM, SRAM, FLASH, DSU UART, user and memory expansion connectors.

Development Platforms *aeroflex.com/Gaisler*	Description
GR-RASTA Spacecraft Avionics Development Platform	LEON3FT based avionics development platform in standalone, bench-top configuration. Supports 32-bit/33MHz PCI, Ethernet, CAN, 1553, CCDS TM/TC, SpaceWire links capable of running up to 200Mbit/s. The platform is configurable and built to customer needs.
SpaceWire-RTC Development Suite	A development system to support the development of hardware and software for the SpaceWire-RTC ASIC.

Test Equipment *aeroflex.com/Gaisler*	Description
GRESB SpaceWire/Ethernet Bridge	The GRESB bridge facilitates rapid development and testing of equipment with SpaceWire interfaces. It provides three bi-directional SpaceWire links with a maximum bit rate of 100 Mbit/s and six "virtual" links that are interfaced through TCP sockets. Each SpaceWire link can be individually configured with respect of transmission bit rate.

Voltage Regulators*

aeroflex.com/VoltReg

	Total # Regulators	Adjustable	# Positive Regulators	Positive Voltage Range (V)	# Negative Regulators	Negative Voltage Range (V)	Positive Output Current (A)	Negative Output Current (A)	Total Dose krads(Si)	Package Style	Package Size (inches)	Thru-Hole	Surface Mount	# Leads	SMD #
VRG8601	2	■	1	1.2 to 37	1	-1.2 to -27	1.5	1.5	100	TO-257	0.65x0.42x0.220	■		6	5962-0521901KXX
VRG8602	2	■	1	1.2 to 37	1	-1.2 to -27	1.5	1.5	100	TO-257	0.65x0.42x0.220		■	6	5962-0521901KYX
VRG8607	2	■	2	1.2 to 37			1.5	1.5	100	TO-257	0.65x0.42x0.220	■		6	5962-0521903KXX
VRG8608	2	■	2	1.2 to 37			1.5	1.5	100	TO-257	0.65x0.42x 0.220		■	6	5962-0521903KYX
VRG8609	2	■			2	-1.2 to -27	1.5	1.5	100	TO-257	0.65x0.42x0.220	■		6	5962-0521904KXX
VRG8610	2	■			2	-1.2 to -27	1.5	1.5	100	TO-257	0.65x0.42x 0.220		■	6	5962-0521904KYX
VRG8651	2	■	1	1.3 to 23	1	-2.5 to -25	1.0	3.0	100	TO-257	0.75x0.42x0.220	■		8	5962-0920101KXX
VRG8652	2	■	1	1.3 to 23	1	-2.5 to -25	1.0	3.0	100	TO-257	0.75x0.42x0.220		■	8	5962-0920101KYX
VRG8657	2	■	2	1.3 to 23			1.0		100	TO-257	0.65x0.42x0.220	■		6	5962-0920102KXX
VRG8658	2	■	2	1.3 to 23			1.0		100	TO-257	0.65x0.42x0.220		■	6	5962-0920102KYX
VRG8660	1	■	1	1.2 to 37			1.5		100	SMD-0.5	0.40x0.30x0. 130		■	3	5962-0920601KXX
VRG8661	1	■			1	-1.2 to -27		1.5	100	SMD-0.5	0.40x0.30x0. 130		■	3	5962-0920602KXX
VRG8662	1	■	1	1.3 to 23			1.0		100	SMD-0.5	0.40x0.30x0. 130		■	3	5962-0920701KXX
VRG8663	1	■			1	-2.5 to -25		3.0	100	SMD	0.55x0.30x0. 130		■	5	5962-0920702KYX

* Aeroflex Plainview does not currently have a DSCC Certified Radiation Hardness Assurance Program

Analog Multiplexer Modules*

aeroflex.com/MUX

	Total Channels	Channels Voltage	Channels Voltage and Current (4 wire)	Transorbs Input Protection	# of Address Busses	# of Enable Lines	Total Dose krads(Si)	SELI Immune up to MeV - cm²/mg	Package	SMD #
ACT8500	64	32	32	■	2	4	300	120	1.320" SQ 96-lead (CQFP)	5962-0050201KXC
ACT8501	64	64		■	2	4	300	120	1.320" SQ 96-lead (CQFP)	5962-0050202KXC
ACT8502	48		48	■	1	3	300	120	1.320" SQ 96-lead (CQFP)	5962-0323401KXC
ACT8503	48	48		■	1	3	300	120	1.320" SQ 96-lead (CQFP)	5962-0323403KXC
ACT8506	48		48		1	3	300	120	1.320" SQ 96-lead (CQFP)	5962-0323402KXC
ACT8508	32	32		■	2	2	300	120	1.320" SQ 96-lead (CQFP)	5962-0822601KXC
ACT8510**	64	32	32	■	2	4	150	90	1.320" SQ 96-lead (CQFP)	5962-0920201KXC
ACT8511**	64	64		■	2	4	150	90	1.320" SQ 96-lead (CQFP)	5962-0920202KXC
ACT8512**	48		48	■	1	3	150	90	1.320" SQ 96-lead (CQFP)	5962-0920301KXC
ACT8513**	48	48		■	1	3	150	90	1.320" SQ 96-lead (CQFP)	5962-0920302KXC
ACT8518**	32	32		■	2	2	150	90	1.320" SQ 96-lead (CQFP)	5962-0920401KXC

* Aeroflex Plainview does not currently have a DSCC Certified Radiation Hardness Assurance Program
** These latest MUX products offer lower Rds-on and faster switching times

HiRel Microelectronics*

aeroflex.com/HiRel

	Features	Total Dose krads(Si)	SEU Immune up to MeV - cm²/mg	Package	SMD #
TAQ8100 Telemetry Acquisition Controller	Radiation hardened programmable Telemetry Acquisition Controller IC supporting up to 56 channels of analog telemetry reporting. Data is accessed via an external MIL-STD-1553B serial data bus. This allows for simple and fast integration with mission specific instrumentation.	100	128	1.460" SQ 256-lead (CQFP)	5962R99B0106V4C
ACT5028 Resolver-to-Digital Converter	16-bit Resolver-to-Digital Converter, accuracy to 5.3 arc minutes, single +5 volt supply, selectable for 16-, 14-, 12- and 10-bit modes, selectable rotational speeds and loop characteristics, -55°C to 125°C operation, package size 0.956" SQ x 0.10" HT.	1,000	100	52-pin CQFP	5962-04235
ACT4453 +5V, Dual Transceiver	1760/1553 compatible, 5-volt, low power, package size 0.775" x 1.9".	100	TBD	36 FP	5962-89522
ACT4485 RS485 Dual Transceiver	Monolithic dual bus/line transceiver designed for multipoint data transmission standard RS485 applications. The ACT4485 meets TIA/EIA -485 requirements. The receiver has a fail-safe feature which guarantees a high output state when the BUS is open or shorted.	100	TBD	0.630" SQ 18-lead flatpack	TBD

* Aeroflex Plainview does not currently have a DSCC Certified Radiation Hardness Assurance Program

Custom Chip-on-Board Multi-Chip Module Ball Grid Array Assembly Services

aeroflex.com/HiRel

	Description and Features
Assembly Services	Aeroflex is capable of implementing customer provided electrical designs as Custom Chip-on-Board (COB) Multi-Chip Modules (MCM) on a Ball Grid Array (BGA) substrate. This technology is ideal for Mixed-Signal applications up to 2GHz. COB-MCMs are available with metal housings to hermetically seal the die islands or with encapsulated die for non-hermetic applications. The low mass allows the device to be automatically picked and placed. The ability to offer high I/O counts provides the flexibility military and space OEMs need when facing obsolescence issues. The additional benefit of increased functionality in a smaller-size, lower-weight footprint reduces the bill of material parts count. Aeroflex's COB-BGA-MCM designs have been qualified and flown in space. Qualification to MIL-PRF-38534 is available.

Power from **AEROFLEX** Plainview

HiRel Power*
aeroflex.com/power

	Features	Total Dose krads(Si)	SEU Immune up to MeV - cm²/mg	Package	SMD #
PWM5031 / PWM5032 High Speed PWM Controller	Optimized for applications: Buck, Boost, Flyback, Forward and Center-Tapped Push-Pull Converters. Supports current mode or voltage mode operations. Selectable 50%/100% duty cycle. Low power CMOS technology.	1,000	100	24-lead	5962-06251
ACT5108/5109 Motor Drivers	3-phase, two bus voltage ranges - (13V to 90V) and (22V to 120V), package size 3.4" x 2.1" x 0.370" HT.	100	TBD	30 FP	TBD

* Aeroflex Plainview does not currently have a DSCC Certified Radiation Hardness Assurance Program

Power Modules
aeroflex.com/power

	Features	Package
ACT5101-1 Three Phase Brushless DC Motor Driver	High-voltage three phase motor driver features a 500 VDS rating, 50A continuous current (up to 85°C) with 4 quadrant control, 6-step trapezoidal drive cap, isolated upper and lower gate drivers.	26-lead Plug-in package 3.0" x 2.1"

Battery Electronics Units
aeroflex.com/BEU

	Cells	Features	Size
		Aeroflex Plainview's new Battery Electronics Units provide autonomous cell balancing for Lithium-ion batteries. They control the balancing of a series stack of Lithium-ion cells to ensure that each cell is precisely charged to its proper level of energy and to monitor each cell's operational voltage. The cell balancing circuitry uses a set of bi-directional DC-DC converters which tie the cells of the battery to a common share bus. Cell charge is distributed among the multiple cells so that the charge of each cell is automatically matched to the average charge of the other cells. Optional features include reconditioning load control and cell bypass relay drivers.	
BEU8635	8, 12, 24	Balancing 8-24 cell batteries, with cell voltage monitoring and telemetry	11.5" L x 2.50" W x 5.125" H
BEU8636	8, 12, 24	Balancing 8-24 cell batteries, with cell voltage monitoring with reconditioning load control and bypass device driver option	11.5"L x 3.30"W x 5.250"H
BEU8637	8, 12	Independent balancing for two 8 and 12 cell batteries, with cell voltage monitoring and telemetry	11.5" L x 4.125" W x 5.250" H
BEU8638	8, 12	Independent balancing for two 8 and 12 cell batteries, with cell voltage monitoring and telemetry, reconditioning load control and cell bypass relay drivers	5.4" L x 9.0" W x 1.0" H
BEU8640	24	Dual redundant balancing for 24-cell battery, with cell voltage monitoring and telemetry, reconditioning load control and cell bypass relay drivers	11.5" L x 5.250" W x 5.250" H
BEU8642-EVAL	8	Cell balancing to within 10mV of 8 series stacked LiIon cells. Temperature Monitoring. Cell Voltage Monitoring. Built-In-Test (BIT) Discrete Output. Optional Serial Output - RS422	11.5" L x 5.250" W x 5.250" H
BEU8645-13	13	Low power and low current cell balancing for small battery packs. Supports cell balancing for batteries consisting of 2 cells through 13 cells.	2.3" L x 6.1" W x 0.65"H

Modulator Driver and Limiting Amps

aeroflex.com/Microwave

	Description	Features
AMPF-108MDA	High-gain modulator driver amplifier, 10 Gb/s	50 KHz to 13 GHz, less than 3 watt power consumption for 6.5 Vpp out, 35 dB typical gain
AMPF-128MDA	12.5 Gb/s high-gain modulator driver amplifier	50 KHz to 15 GHz, less than 3 watt power consumption for 6.5 Vpp out, 35 dB typical gain
AMPF-122LM	Limiting amplifier	Output rise/fall time <28 ps, 85% Eye opening, Input range 30 to 1200 mVpp with constant output

Logarithmic Amps

aeroflex.com/Microwave

	Description	Features
L0204-70	Logarithmic amplifier	2.0 to 4.0 GHz, -70 dynamic range, 10 nsec rise time, 25 ns fall time
L0208-65	Logarithmic amplifier	2.0 to 8.0 GHz, -65 dBm dynamic range, 10 nsec rise time, 25 ns fall time
L0408-67	Logarithmic amplifier	4 to 8 GHz, 67 dBm dynamic range, 10 nsec rise time, 25 ns fall time
L004015-90	Logarithmic amplifier	400 MHz to 1.5 GHz, 90 dBm dynamic range, 15 nsec rise time, 25 ns fall time

Medium- and High-Power Amps

aeroflex.com/Microwave

	Description	Features
PA00104-27	Medium-power amplifier	0.1 to 4.0 GHz, P1 dB >27 dBm, 25 dB typical gain, Single power supply +10V to +15V
PA010020-33	Medium-power amplifier	1.0 to 2.0 GHz, 2 Watt output power at 1 dB G.C.P., Low noise - less than 4 dB
PA090102-38†	High-power amplifier	Dual channel 9.0 to 10.2 GHz, 35 dB typical gain, >20% power-added efficient, 8 W CW per channel
PA090102-42	High-power amplifier (X-band)	9.0 to 10.2 GHz, 35 dB typical gain, >20% power-added efficient, 15 Watt CW
PA020180-3025-SS	Broadband power amplifier	2 to 18 GHz >30 dBm p1dB up to 18 GHz, 25 dB typical gain, single supply
PA021023-39	High-efficiency power amplifier	2.1 to 2.3 GHz, 8 W CW output power, >35% overall efficiency

† Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/microwave

RF Switch and Up/Down Converters

aeroflex.com/Microwave

	Description	Features
SWSP6T-0002020-35	Absorptive RF switch	SP6T, high-isolation >38 dB @ 2 GHz, low insertion loss of 2.0 dB @ 1 GHz, Space qualified
SWSPDT-001030-45	Absorptive RF switch	SPDT, 0.1 to 3 GHz, fast switching speed, <25 ns, low current <200 uA, Space qualified
SWSPDT-005140-60	Absorptive RF Switch	SPDT 0.5 to 14 GHz, high Isolation >60 dB, fast switching
SWSPDT-002030-55	Absorptive RF Switch	SPDT very high Isolation >55 dB up to 3 GHz, compact size, low insertion loss, Space qualified
SWMX-060120-42-85†	RF Switch Matrix	X-Band 4 to 2 switch matrix, 85 dB isolation, compact size
SWSPDT-005020-35†	Reflective RF Switch	SPDT using Agilent GaAs Technology, 0.5 to 20 GHz, high isolation > 35 dB, low insertion loss
AT0000601-20†	Step Attenuator	0/20 dB using Agilent GaAs technology with MESFET switch, DC-6 GHz, low insertion loss

† Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/microwave

MICROPROCESSOR AND MEMORY MODULES

MIPS RISC 64Bit Microprocessors*

aeroflex.com/MIPS

	Description	CPU Speeds (MHz)	Package
ACT-5260PC-(120 to 180)F17X	64-Bit I/O, 16K/16K L1 cache, 3.3V core supply with 3.3/5V tol. I/O.	120, 150, 180	208-lead CQFP (1.12"sq)
ACT-7000SC-(150 to 225)F17X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 2.5V core supply with 3.3V I/O.	150, 200, 210, 225	208-lead CQFP (1.12"sq)
ACT-7000SC-(150 to 225)F24X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 2.5V core supply with 3.3V I/O.	150, 200, 210, 225	208-lead CQFP (1.12"sq)
ACT-7000ASC-(200 to 300)F17X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 1.8V core supply with 3.3V I/O.	200, 250, 300	208-lead CQFP (1.12"sq)
ACT-7000ASC-(200 to 300)F24X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 1.8V core supply with 3.3V I/O.	200, 250, 300	208-lead CQFP (1.12"sq)
MIP7965-(668 to 750)F17X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 1.3V core supply with 3.3V I/O.	668, 750	208-lead CQFP (1.12"sq)
MIP7965-(668 to 750)F24X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 1.3V core supply with 3.3V I/O.	668, 750	208-lead CQFP (1.12"sq)
MIP7965-(668 to 750)B1X	64-Bit I/O, 16K/16K L1 cache, 256K L2, 1.3V core supply with 3.3V I/O.	668, 750	Plastic 256-TBGA (26mm sq)

* Contact Aeroflex at 800-645-8862 for prototyping adapter cards for migrating to the next-generation CPUs

Memory Modules

aeroflex.com/avionics

	Speeds (nS)	Aeroflex Part #	Package	SMD #
SDRAM 1M96, 96Mbit, 3.3V	20	ACT-D1M965-020F20X	200 CQFP 1.45" sq.	N/A
SDRAM 16M96, 16x96Mbit, 3.3V†	20	ACT-D16M965-020F20X	200 CQFP 1.45" sq.	N/A

† Product in development; please call 800-645-8862 for more information or visit the web site aeroflex.com/avionics.

MILITARY AVIONICS DATA COMMUNICATION MODULES

MIL-STD-1397 Navy Serial 10MHz Bus

aeroflex.com/avionics

	Description	Package
CT1698	MIL-STD-1397 Type E 10MHz low-level serial interface	34-pin FP or DIP 1.810" x 1.410" x 0.180" HT.
CT2500	MIL-STD-1397 Type D & E low-level serial interface protocol chip	84-pin PGA 1.810" x 1.410" x 0.180" HT.

MIL-STD-1553 Encoder-Decoder

aeroflex.com/avionics

	Description	SMD #
CT1820 Series	56-pin plug-in 2.2" x 1.2"; terminal bit processor; +5V; also available in a 1.0" x 1.7" 60-lead flatpack.	5962-90636
ACT15530	Manchester encoder/decoder replacement for obsolete Harris HA-15530 24-pin – dip or flatpack; 28 PIN-LCC.	-

MILITARY AVIONICS DATA COMMUNICATION MODULES

VME Boards and Integrated Products

aeroflex.com/avionics

	Features
ACT8010/8011 (STAR MVP®)	MIPS based single board computer assemblies; MIL-6U-VME format, RM7000, 64-bit MIPS CPU, DMA Controller, 64 Mb EDO DRAM, 16-64 Mb Flash, 8 Kb NovRAM, I/O Subsystem Interface, RS232 Ports and 3-1553B Ports, Ethernet, Mezzanine Expansion.

MIL-STD-1553 Integrated Terminals

aeroflex.com/avionics

	Description	SMD #
CT1990	Performs the complete dual-redundant remote terminal, bus controller protocol and passive monitor functions of MIL-STD-1553; direct replacement to CT1612; 90-pin 1.6" x 2.4" ceramic plug-in package; 5V dc operation; full military (-55°C to +125°C) temperature range.	5962-9477501
CT2511 / CT2511-FP	Same as CT2510 except +5V, -12V; direct replacement for BUS65111 (CT2511-FP is direct replacement for BUS-65121).	TBD
CT2512 / CT2512-FP	78-pin quad plug-in 1.9" x 2.1" or 82-lead flatpack; dual redundant remote terminal with dual transceivers; +5V, ±15V; 16-bit bus; 12 MHz; direct replacement for BUS65112 (CT2512-FP is the direct replacement for BUS-65117).	5962-8753503
CT2512-PCB / CT2512-FP-PCB	Same as CT2512 except antifuse FPGA based implementation, COTS PCB construction dual surface mount transceivers and on board regulator; available in flatpack.	N/A
CT2542 / CT2542-FP	78-pin quad plug-in 1.9" x 2.1" or 82-lead flatpack; dual redundant remote terminal with dual transceivers; +5V, -15V; 16-bit bus; 16 MHz; direct replacement for BUS65142 (CT2542-FP is direct replacement for BUS-65144).	5962-8979803
CT2553 / CT2553-FP	78-pin quad plug-in 1.9" x 2.1" or 82-lead flatpack; dual redundant BC/RT/MT protocol unit with dual transceivers; 8K x 16 Ram; +5V, -15V; direct replacement for BUS61553 (CT2553-FP is direct replacement for BUS-61563).	5962-8869201
CT2553-PCB / CT2553-FP-PCB	Same as CT2553 except antifuse FPGA based implementation, COTS PCB construction dual surface mount transceivers and on board regulator; available in flatpack.	TBD
CT2554 / CT2554-FP	Same as CT2553 except +5V, -12V; direct replacement for BUS61554 (CT2554-FP is direct replacement for BUS-61564).	5962-8869202
CT2554-PCB / CT2554-FP-PCB	Same as CT2554 except antifuse FPGA based implementation, COTS PCB construction dual surface mount transceivers and on board regulator; available in flatpack.	TBD
CT2555 / CT2555-FP	Same as CT2553 except +5V only; direct replacement for BUS61555 (CT2555-FP is direct replacement for BUS-61565).	5962-8869203
CT2555-PCB / CT2555-FP-PCB	Same as CT2555 except antifuse FPGA based implementation, COTS PCB construction dual surface mount transceiver, 8k x 16 SRAM and regulator.	TBD
CT2577-P119*	16 MHz, 119-pin CPGA 1.3" sq.; BC/RT protocol unit with dual MIL-STD-1553/1760 transceivers; 3K x 16 Ram; 8 or 16-bit VME/Multibus processor interface; optional 1760 checksum; 1760 header word identification; latched RT address; store release signal; +5V.	N/A
CT2578-P119	119-pin CPGA 1.3" sq.; Simple RT protocol unit with dual MIL-STD-1553 A/B transceivers; DMA handshake; +5V.	N/A
CT2578-F84	Similar to CT2578-P119 except 84-lead CQFP 1.16" sq.	N/A
CT2579-P119*	16 MHz, 119-pin CPGA 1.3" sq.; BC/RT protocol unit with dual MIL-STD-1553 A/B / MacAir transceivers; 3K x 16 Ram; 8 or 16-bit VME/Multibus processor interface; optional 1760 checksum; 1760 header word identification; latched RT address; store release signal; +5V.	N/A
ACT3492	100-pin CPGA 1.1" sq.; BC/RT/MT with Status Word Control and Dual Low Power Monolithic Transceivers; +5V; 250 mw typical power consumption. 6MHz clock.	N/A
ACT7005	90-pin Ceramic plug-in 1.1" x 2.2"; dual redundant BC/RT protocol unit with dual transceivers; 2K x 16 Ram; 8 or 16-bit processor interface; +5V.	N/A
ACT7006	Same as ACT7005 except with external SSF status bit control.	N/A

N/A = not actively pursuing an SMD

* Contact Aeroflex at 800-645-8862; these are not in full production

MILITARY AVIONICS DATA COMMUNICATION MODULES

Data Bus Transceivers Single Channel *aeroflex.com/avionics*	1553/1760	MacAir	Size	Package Type	Leads	Idle RCVR Outputs	Power Supplies	Turns Ratio	Transformer Center Tap Ground	SMD #
ACT4402	■		0.62″ x 1.25″	Plug-in	24	Low	+5V, ±15V	1.4:1	■	TBD
ACT4402I	■		0.62″ x 1.25″	Plug-in	24	High	+5V, ±15V	1.4:1	■	TBD
ACT4404N** (replaces CT3232M)	■	■	1.27″ x 1.27″	Plug-in or Flatpack	24	High	+5V, ±12V to ±15V	1:1	Open	5962-91749
ACT4438-1, ACT4438-3	■		8 mm x 8 mm	BCC++	56	Low	+5V	2.5:1	■	TBD
ACT4444 (see ACT4462D)	■	■	9 mm x 9 mm	BCC++	64	Low/High	+5V, ±12V to ±15V	1:1	Open	TBD
ACT4445 (see ACT4487D)	■		9 mm x 9 mm	BCC++	64	Low/High	+5V, ±12V to ±15V	1.4:1	■	TBD
ACT4455	■		0.445″ x 0.445″	LCC	28	Low	+5V	2.5:1	■	5962-96741
ACT4459	■		0.445″ x 0.445″	LCC	28	High	+5V	2.5:1	■	5962-96741
ACT4406N (replaces ARX3404)	■	■	1.27″ x 1.27″	Plug-in or Flatpack	24	High	+5V, ±12V to ±15V	1:1	Open	5962-89592
ACT4407N (replaces CT3231M)	■		1.27″ x 1.27″	Plug-in or Flatpack	24	High	+5V, ±12V to ±15V	1:1	Open	5962-91749
ACT4417N	■		1.27″ x 1.27″	Plug-in or Flatpack	24	High	+5V, ±12V to ±15V	1:1	Open	TBD
ACT4418N*	■	■	1.27″ x 1.27″	Plug-in or Flatpack	24	Low	+5V, ±12V to ±15V	1:1	Open	5962-92085
ACT4435N (replaces CT1816 and CT1641)		H009	1.27″ x 1.27″	Plug-in or Flatpack	24	High	+5V, ±12V to ±15V	1:1	Open	TBD
ACT4487 (equiv BUS8553)	■		0.805″ x 1.385″ 0.735″ x 1.315″	Plug-in and Flatpack	24	High	±5V, ±15V	1.4:1	■	TBD

* Variable Amplitude Transceiver (similar to ARX4418) - contact factory for information
** Has external threshold control

MILITARY AVIONICS DATA COMMUNICATION MODULES

Data Bus Transceivers Dual Channel* aeroflex.com/avionics	1553/1760	MacAir	Size	Package Type	Leads	Variable Amplitude Transmitter	Power Supplies	Turns Ratio	Transformer Center Tap Ground	SMD #
ACT4419D	■		0.3″ x 1.2″	Plug-in	20	■	+5V	2.5:1	■	TBD
ACT4419DF	■		0.3″ x 1.2″	Flatpack	20	■	+5V	2.5:1	■	TBD
ACT4453	■		0.775″ x 1.9″	Plug-in or Flatpack	36		+5V	2.12:1	■	5962-89522
ACT4458	■		0.6″ x 0.8″	Flatpack	24		+5V	2.5:1	■	5962-92061
ACT4464	■		0.6″ x 0.8″	Flatpack	24		+5V	2.5:1	■	5962-92061
ACT4461DF	■		0.6″ x 0.8″	Flatpack	24		+5V	2.5:1	■	TBD
ACT4468D (equiv NHI-1567)	■		0.3″ x 1.0″	Plug-in	20		+5V	2.5:1	■	TBD
ACT4468DF	■		0.3″ x 1.0″	Flatpack	20		+5V	2.5:1	■	TBD
ACT4462D (pin selectable H009 transmitter)	■	■ H009	0.62″ x 1.25″	Plug-in	24	■	+5V, ±12V to 15V	1:1	Open	TBD
ACT4469D		H009	0.62″ x 1.25″	Plug-in	24	■	+5V, ±15V	1:1	■	TBD
ACT4479D		H009	0.775″ x 1.5″	Plug-in	28		+5V, ±15V	1:1	■	TBD
ACT4479DF		H009	0.775″ x 1.5″	Flatpack	28		+5V, ±15V	1:1	■	TBD
ACT4489D	■		0.775″ x 1.9″	Plug-in	36		+5V, ±12V	1:1	■	TBD
ACT4489DF	■		0.775″ x 1.9″	Flatpack	36		+5V, ±12V	1:1	■	TBD
ACT4433D	■		0.775″ x 1.5″	Plug-in	28		+5V, ±12V	1:1	■	TBD
ACT4433DF	■		0.775″ x 1.5″	Flatpack	28		+5V, ±12V	1:1	■	TBD
ACT4487D	■		0.775″ x 1.9″	Plug-in	36		+5V, ±15V	1.4:1	■	5962-87579
ACT4487DI	■		0.775″ x 1.9″	Plug-in	36		+5V, ±15V	1.4:1	■	5962-89447
ACT4487DF	■		0.775″ x 1.9″	Flatpack	36		+5V, ±15V	1.4:1	■	5962-87579
ACT4487DFI	■		0.775″ x 1.9″	Flatpack	36		+5V, ±15V	1.4:1	■	5962-89447
ACT4436D	■		0.775″ x 1.5″	Plug-in	28		+5V, ±15V	1.4:1	■	TBD
ACT4436DI	■		0.775″ x 1.5″	Plug-in	28		+5V, ±15V	1.4:1	■	5962-89447
ACT4436DF	■		0.775″ x 1.5″	Flatpack	28		+5V, ±15V	1.4:1	■	TBD
ACT4436DFI	■		0.775″ x 1.5″	Flatpack	28		+5V, ±15V	1.4:1	■	5962-89447
ACT4808N-D	■	■	0.775″ x 1.9″	Plug-in	36		+5V, ±12V to ±15V	1:1	Open	TBD
ACT4808N-DF	■	■	0.775″ x 1.9″	Flatpack	36		+5V, ±12V to ±15V	1:1	Open	TBD

* See individual data sheets for receiver output idle low/high.

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

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